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EXAMINER

WOLLSCHLAGER, JEFFREY MICHAEL

ART UNIT	PAPER NUMBER
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1791

MAIL DATE	DELIVERY MODE
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02/05/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/511,014	SEO ET AL.
Examiner	Art Unit	
Jeff Wollschlager	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 08 November 2007.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 3 and 5-18 is/are pending in the application.
4a) Of the above claim(s) 5 and 6 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 3 and 7-18 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/ are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
5) Notice of Informal Patent Application
6) Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 8, 2007 has been entered.

Response to Amendment

Applicant's amendment to the claims filed November 8, 2007 has been entered. Claims 3, 7 and 14 are currently amended. Claims 1, 2, and 4 have been canceled. Claims 5 and 6 remain withdrawn from further consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 3 is rejected under 35 U.S.C. 103(a) as being obvious over Bastioli et al. (U.S. Patent 5,145,626) in view of Matsunaga et al. (US 5,646,077) and Oishi et al. (US 4,172,869).

Regarding claim 3, Bastioli et al. teach a method of manufacturing a fiber-reinforced composite comprising: fibrillating and combining thermoplastic "granules" and reinforcing fibers; dispersing and volatilizing the combined fibers to form a composite mat; and needle-punching the composite mat (Abstract; col. 1, line 59-col. 2, line 57; col. 3, lines 40-65; col. 4, lines 27-30; Figure 1, elements (3), (4), (5), (6)). Bastioli et al. teach heating the material after needle punching and cooling the mat to obtain a composite sheet (Figure 1, element (8) (9), (10), (13), (14)). Bastioli et al. teach reheating the composite sheet through a compressing zone (Figure 1, elements (9), (10), and (13)) and continuing to apply pressure while cooling (14).

Bastioli et al. do not expressly teach employment of thermoplastic "fibers". Bastioli et al. also do not teach the compression is applied by a belt having upper and lower rollers wherein the interval between the rollers gradually decreases. However, Matsunaga et al. analogously (col. 3, lines 66-col. 4, lines 15) teach a method of producing a composite wherein reinforcing fibers and thermoplastic fibers are employed together (Abstract; col. 2, lines 16-37; col. 3, lines 24-28;) to produce a composite that has a soft feel and is less liable to flatten during prolonged use (Abstract; col. 4, lines 64-67) and Oishi et al. analogously teach a method wherein compression is applied by a belt having upper and lower rollers wherein the interval between the rollers gradually decreases (Figures 11 and 12; col. 15, line 41-col. 16, line 22).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Bastioli et al. and to have replaced the thermoplastic "granules" of Bastioli et al. with the thermoplastic "fibers" of

Matsunaga et al., for the purpose, as suggested by Matsunaga et al., of producing a composite having a soft feel and that is less likely to flatten during prolonged use. Additionally, it would have been obvious to one having ordinary skill at the time of the claimed invention to have modified the compressing belt of Bastioli et al. and to have employed the compressing belt of Oishi et al. for the purpose of ensuring complete contact with the mat during the compressing step in an art recognized equivalent and suitable manner (MPEP 2144.06-2144.07).

Regarding the limitation that a pseudo-foamed composite is formed due to entanglement of the combined fibers when the pressure is instantaneously decreased, the examiner notes that the combination employs the same claimed materials in the same claimed manner. As such, the same claimed effects and physical properties would be intrinsically realized by the practice of the combined method.

Claims 7, 10 and 12-18 are rejected under 35 U.S.C. 103(a) as being obvious over Bastioli et al. (U.S. Patent 5,145,626) in view of Matsunaga et al. (US 5,646,077).

Regarding claim 7, Bastioli et al. teach a method of manufacturing a fiber-reinforced composite comprising: fibrillating and combining thermoplastic "granules" and reinforcing fibers; dispersing and volatilizing the combined fibers to form a composite mat; and needle-punching the composite mat (Abstract; col. 1, line 59-col. 2, line 57; col. 3, lines 40-65; col. 4, lines 27-30; Figure 1, elements (3), (4), (5), (6)). Bastioli et al. teach heating the material after needle punching and cooling the mat to obtain a composite sheet (Figure 1, element (8) (9), (10), (13), (14)). Bastioli et al. teach reheating the composite sheet through a compressing zone (Figure 1, elements (9), (10), and (13)) and continuing to apply pressure while cooling (14).

Bastioli et al. do not expressly teach employment of thermoplastic "fibers". However, Matsunaga et al. analogously (col. 3, lines 66-col. 4, lines 15) teach a method of producing a

composite wherein reinforcing fibers and thermoplastic fibers are employed together (Abstract; col. 2, lines 16-37; col. 3, lines 24-28;) to produce a composite that has a soft feel and is less liable to flatten during prolonged use (Abstract; col. 4, lines 64-67).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the method of Bastioli et al. and to have replaced the thermoplastic "granules" of Bastioli et al. with the thermoplastic "fibers" of Matsunaga et al. for the purpose, as suggested by Matsunaga et al. of producing a composite having a soft feel and that is less likely to flatten during prolonged use.

Regarding the limitation that a pseudo-foamed composite is formed due to entanglement of the combined fibers when the pressure is instantaneously decreased the examiner notes that the combination employs the same claimed materials in the same claimed manner. As such, the same claimed effects and physical properties would be intrinsically realized by the practice of the combined method.

As to claim 10, when Bastioli et al. cool the product the mat intrinsically cools.

As to claim 12, Bastioli et al. employ the same claimed fibers and therefore their fibers intrinsically have the same claimed physical properties.

As to claims 13-16, Bastioli et al. disclose natural, artificial and synthetic fibers (Abstract; col. 3, lines 13-17) at a range from 10% to 60% (col. 3, lines 10-12) and disclose short fibers representing 5 to 30% by weight (col. 4, lines 7-12).

As to claims 17 and 18, Bastioli et al. disclose the fibers may be continuous or if cut have a length greater than 1 cm with a range of 5 to 25 cm preferred (col. 3, lines 18-27).

Art Unit: 1791

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bastioli et al.

(U.S. Patent 5,145,626) in view of Matsunaga et al. (US 5,646,077), as applied to claims 7, 10 and 12-18 above, in view of Jaffe (US 5,772,846).

As to claim 8, the combination teaches the method set forth above. Bastioli et al. do not state they laminate their thermoformable sheet to form a final product. However, Jaffe disclose forming laminates from thermoformable sheets (Abstract; col. 2, lines 50-60).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have formed a laminate from the sheet produced by Bastioli et al., as suggested by Jaffe for the purpose of providing a desired product.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bastioli et al.

(U.S. Patent 5,145,626) in view of Matsunaga et al. (US 5,646,077), as applied to claims 7, 10 and 12-18 above, in view of Hauber (US 6,773,773).

As to claim 9, Bastioli et al. disclose preheating with infrared heaters not a belt. However, Hauber discloses it is known in the art to heat with infrared heaters or belts (col. 4, lines 31-60).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed an art recognized equivalent alternative heating means, such as a heated belt, in the method disclosed by Bastioli et al. since it has been held that employing art recognized equivalents intended for the same purpose (e.g. heating) is *prima facie* obvious (MPEP 2144.06-2144.07).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bastioli et al. (U.S. Patent 5,145,626) in view of Matsunaga et al. (US 5,646,077), as applied to claims 7, 10 and 12-18 above, in view of Koba et al. (US 5,445,701).

As to claim 11, the combination teaches the method set forth above. Bastioli et al. do not specify the cooling mechanism. However, Koba et al. teach that cooling with air and water is known in the art (col. 5, lines 60-67).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have cooled the composite of Bastioli et al. with conventional means such as water and air as disclosed by Koba et al. due to their ready availability and art recognized suitability.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Francis Jr. (US 2,543,101) in view of Bastioli et al. (U.S. Patent 5,145,626) and Oishi et al. (US 4,172,869).

Regarding claim 3, Francis Jr. teaches the basic claimed process of producing a composite fibrous product wherein fibrillated thermoplastic fibers and reinforcing fibers (col. 1, lines 14-col. 2, line 52; col. 3, lines 57-74; col. 4, lines 12-42) are blown and combined to form a composite mat (col. 4, lines 42-62; Figure 1). The combined mat may be needle-punched (col. 4, lines 64-68) and then it is heated under pressure (col. 5, lines 55-69; Figure 1; col. 6, lines 44-66). The mat is also cooled while under pressure (col. 8, lines 14-24; Figure 1; col. 9, lines 5-54). The product formed by the method is very light weight, has a low density and high porosity and permeability. The examiner notes that these are properties conventionally associated with "foam" material. While Francis teaches adjusting the rollers as needed (col. 9, lines 34-54), Francis does not teach compression is applied by a belt having upper and lower rollers wherein the interval between the rollers gradually decreases.

However, Oishi et al. analogously teach a method wherein compression is applied by a belt having upper and lower rollers wherein the interval between the rollers gradually decreases (Figures 11 and 12; col. 15, line 41-col. 16, line 22).

Additionally, Francis does not teach preheating the mat. However, Bastioli et al. analogously teach preheating a composite fiber mat (col. 4, lines 37).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the teaching of Francis Jr. and to have preheated the mat as suggested by Bastioli et al. for the purpose of reducing the time of the compressing/heating step and to reduce the size of compressing/heating equipment while promoting increased production rates as is routinely practiced in the arts and to have employed a roller configuration as suggested by Oishi et al. for the purpose of producing a composite having the desired final properties, such as density, in an art recognized equivalent manner.

Further, in regard to the "pseudo-foam" limitation, the examiner notes that Francis suggests that properties conventionally associated with foams are achieved. Further, the combination employs the same claimed materials in the same claimed manner. Accordingly, the same claimed effects and physical properties would be intrinsically realized by the practice of the combined method.

Claim 7, 8 and 10-18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Francis Jr. (US 2,543,101) in view of Bastioli et al. (U.S. Patent 5,145,626).

Regarding claim 7, Francis Jr. teaches the basic claimed process of producing a composite fibrous product wherein fibrillated thermoplastic fibers and reinforcing fibers (col. 1, lines 14-col. 2, line 52; col. 3, lines 57-74; col. 4, lines 12-42) are blown and combined to form a composite mat (col. 4, lines 42-62; Figure 1). The combined mat may be needle-punched (col.

Art Unit: 1791

4, lines 64-68) and then it is heated under pressure (col. 5, lines 55-69; Figure 1; col. 6, lines 44-66) The mat is also cooled while under pressure (col. 8, lines 14-24; Figure 1; col. 9, lines 5-54). The product formed by the method is very light weight, has a low density and high porosity and permeability (col. 11, lines 28-57). The examiner notes that these are properties conventionally associated with "foam" material. Francis does not teach preheating the mat. However, Bastioli et al. analogously teach preheating a composite fiber mat (col. 4, lines 37).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have modified the teaching of Francis Jr. and to have preheated the mat as suggested by Bastioli et al. for the purpose of reducing the time of the compressing/heating step and to reduce the size of compressing/heating equipment while promoting increased production rates as is routinely practiced in the arts. Further, in regard to the "pseudo-foam" limitation, the examiner notes that Francis suggests properties conventionally associated with foams are achieved. Further, the combination employs the same claimed materials in the same claimed manner. Accordingly, the same claimed effects and physical properties would be intrinsically realized by the practice of the combined method.

As to claim 8, Francis Jr. laminates the article (Figures 3 and 4).

As to claim 10, when Bastioli et al. cool the product the mat intrinsically cools. Further, Francis cools the mat (30).

As to claim 11, Francis employs an air blower to cool the mat (col. 9, line 26-32)

As to claim 12, the combination employs the same claimed fibers and therefore their fibers intrinsically have the same claimed physical properties.

As to claims 13-16, Bastioli et al. disclose natural, artificial and synthetic fibers (Abstract; col. 3, lines 13-17) at a range from 10% to 60% (col. 3, lines 10-12) and disclose short fibers representing 5 to 30% by weight (col. 4, lines 7-12). Additionally, Francis teach optimizing the

Art Unit: 1791

ratios (col. 11, lines 8-27) and disclose a variety of suitable materials (col. 3, lines 57-75; col. 4, lines 1-42; col. 2, lines 42-col. 3, lines 40).

As to claims 17 and 18, Bastioli et al. disclose the fibers may be continuous or if cut have a length greater than 1 cm with a range of 5 to 25 cm preferred (col. 3, lines 18-27). Further, Francis teaches the fibers may be of any suitable length (col. 4, lines 27-30). The length of the fibers would have been readily optimized as is routinely practiced in the art in view of the teaching of Francis.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Francis Jr. (US 2,543,101) in view of Bastioli et al. (U.S. Patent 5,145,626), as applied to claims 7, 8 and 10-18 above, in view of Hauber (US 6,773,773).

As to claim 9, the combination teaches the method set forth above employing infrared heaters not a belt. However, Hauber discloses it is known in the art to heat with infrared heaters or belts (col. 4, lines 31-60).

Therefore it would have been *prima facie* obvious to one having ordinary skill in the art at the time of the claimed invention to have employed an art recognized equivalent alternative heating means, such as a heated belt, in the method disclosed by the combination since it has been held that employing art recognized equivalents intended for the same purpose (e.g. heating) is *prima facie* obvious (MPEP 2144.06-2144.07).

Response to Arguments

Applicant's arguments regarding the prior art, filed November 8, 2007, have been considered, but are moot in view of the new grounds of rejection necessitated by the

Art Unit: 1791

amendment. Applicant's arguments and the amendment have overcome the 35 U.S.C. 112, first paragraph rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Wollschlager whose telephone number is (571)272-8937. The examiner can normally be reached on Monday - Thursday 6:45 - 4:15, alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on 571-272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. W./
Examiner, Art Unit 1791
February 4, 2008

CJ
CHRISTINA JOHNSON
SUPERVISORY PATENT EXAMINER